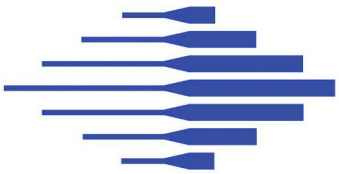

VELOCITY
SOFTWARE

Visualization is Key

Rich Smrcina
Velocity Software, Inc
VM Workshop – June, 2026

Velocity Software, Inc.
info@velocitysoftware.com

Agenda

Performance Management

Visualization

Infrastructure

Grafana

VSIPUMP

Updates to support Open Telemetry

References to zVPS and tools provided by Velocity Software

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Performance Monitoring is integral to IBM Z operating systems

- Well documented, standardized interfaces
- Real time and historical data is made available
  - Via various performance management software
- Show current performance and historical trends

Performance Management interfaces

- CP Monitor on z/VM
- RMF/SMF on z/OS (DMF on VSEn)
- Net-SNMP everywhere

Performance Management

- Performance Analysis
- Operational Alerts
- Capacity Planning
- Accounting/Charge back

Correct data (Virtual Linux CPU data wrong - SMT)

Capture ratios (is the data valid?)

- Compare data from multiple sources

Three kinds of performance monitor products

- Used for performance management
- Used for diagnostics
- Turned off when there's a performance problem

Management can not be the problem….

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Single pane of glass

- No enterprise has only one platform
- One user interface minimizes learning curves
- Evaluate multiple systems, networks, platforms in one view

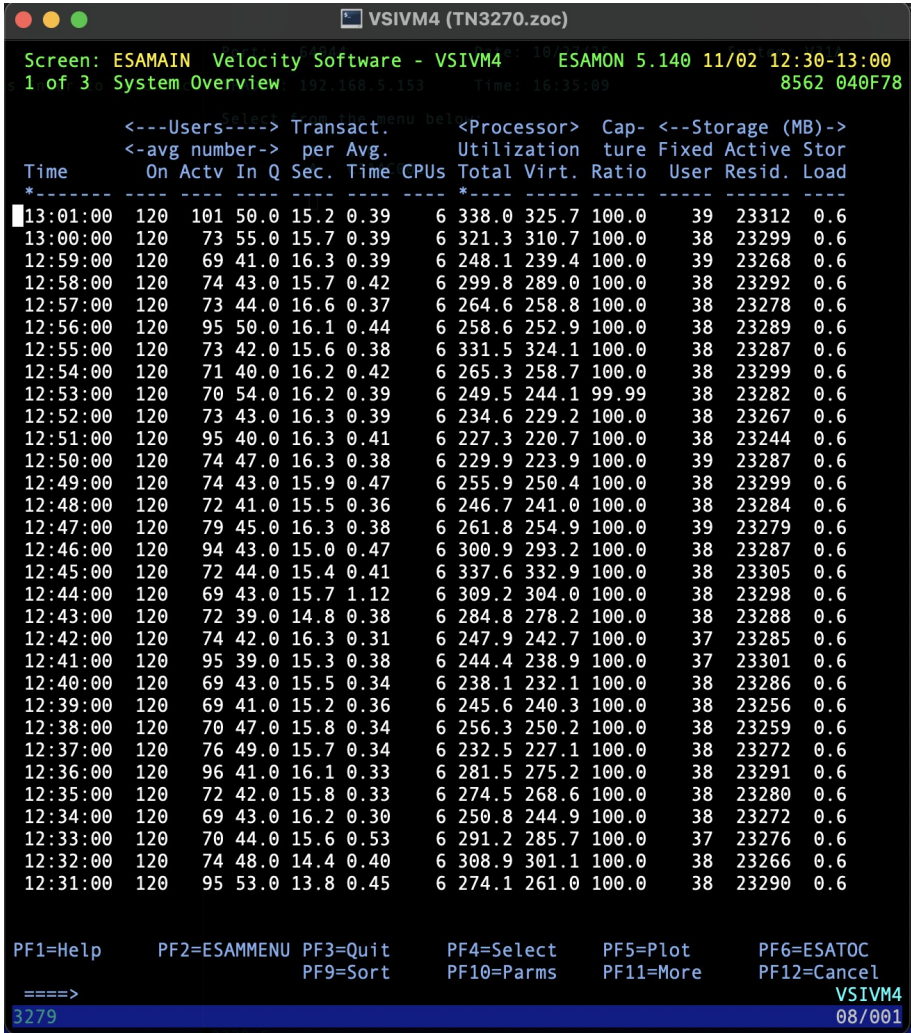
Minimize Overhead of performance management

- Processor costs of performance management can be large
- Many installations run 15-minute granularity to reduce overhead
- “Only run this when there is a problem” is not performance managment

A target of less than 1% of CPU resource for performance management is a reasonable target

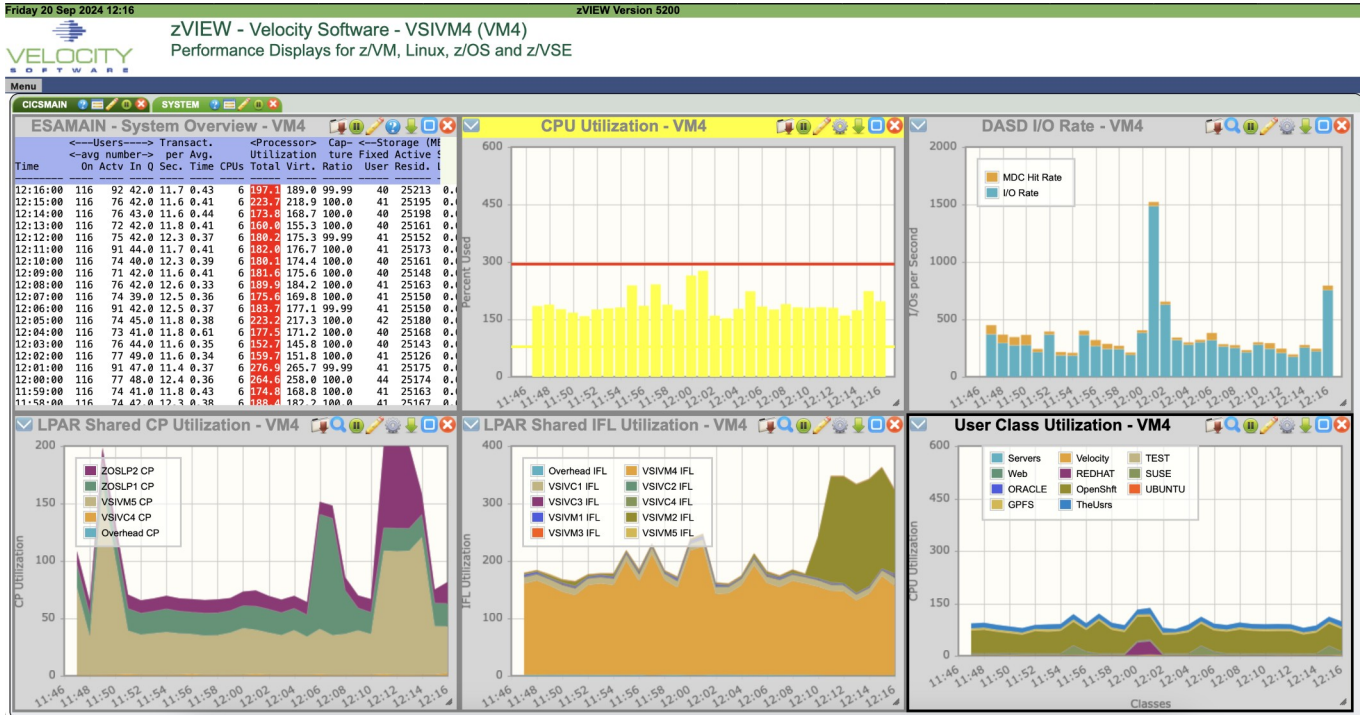
Traditional way to look at data

- Handles z/VM, Linux, Applications, Network, VSE, and z/OS on individual screens
- All with one easy to use interface
- Familiar and comfortable



Web based display

- Individual windows for tabular data or graphs
- Standard set of graphs and graph types
- Multiple systems can be displayed
- Any data can be mixed (VM, Linux, VSE, z/OS)
- Users can save their own view of data



Customers ask for more modern visualization tools

- Up to date displays
- Better graphics
- Familiar to a wider audience

The volume of the data is the problem

- The CP Monitor and SNMP provide all of the data every minute
- IBM z based tools are designed to display the data
  - In a manner typical for the platform
- Typically raw tabular displays and graphs
- Hundreds of screens and thousands of various metrics

The tools used are InfluxDB and Grafana

InfluxDB 1.10 was tested

Grafana 9.5.5

They can be installed together or separately

On InfluxDB, create a user

```
create user vsi with password 'velocity' with all privileges
```

Create a database called 'zvm'

```
create database zvm
```

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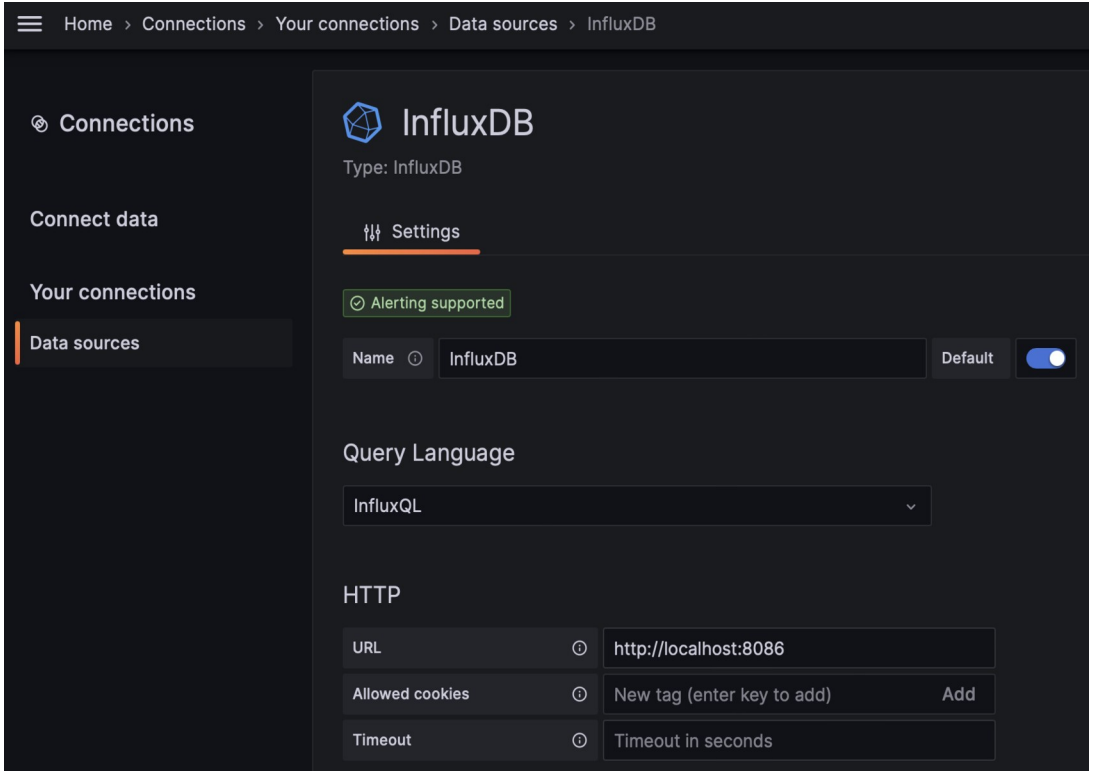
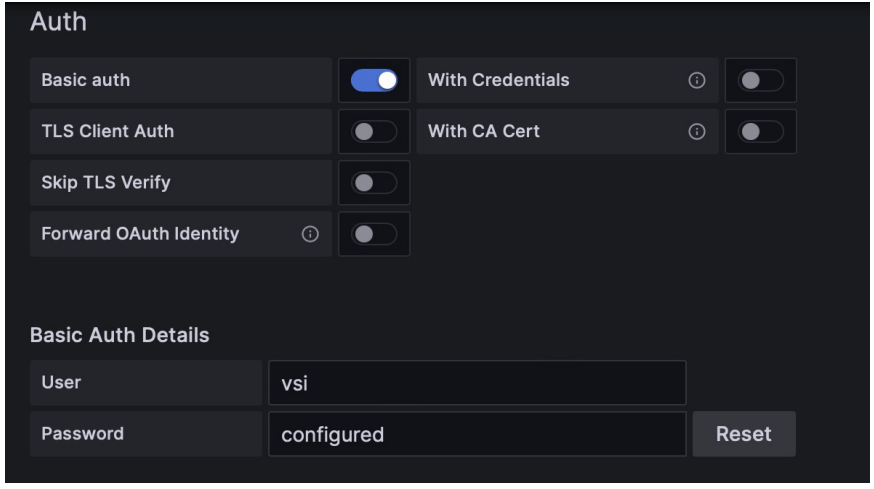
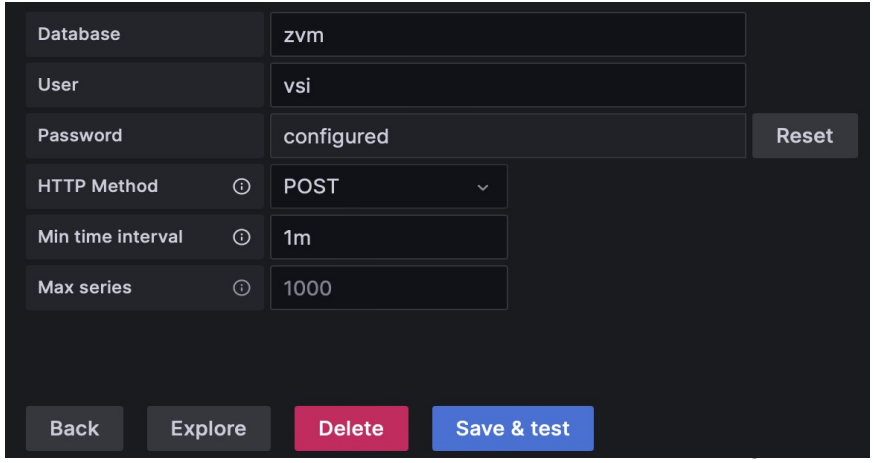
Create a database connection in Grafana







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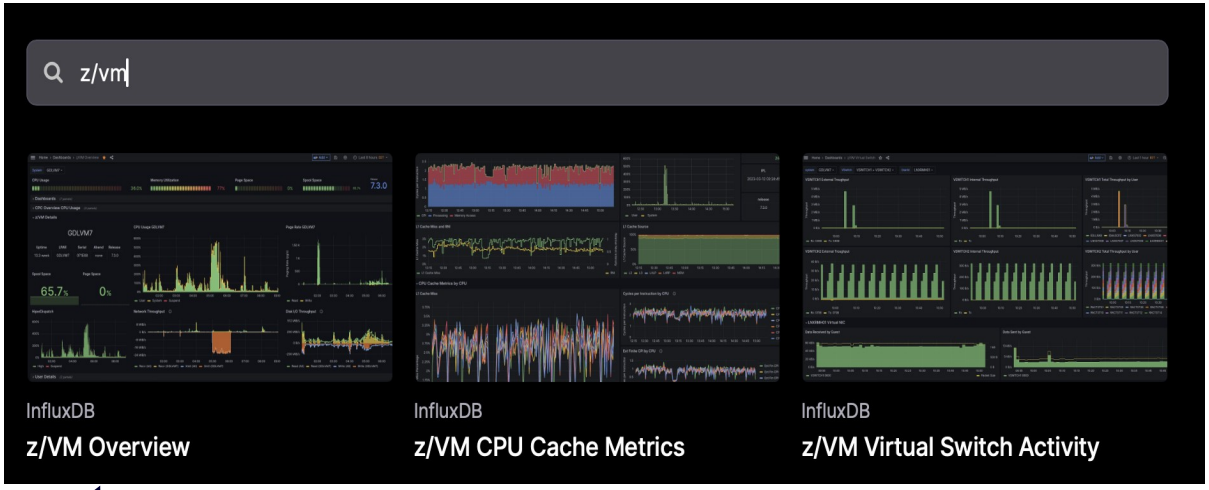
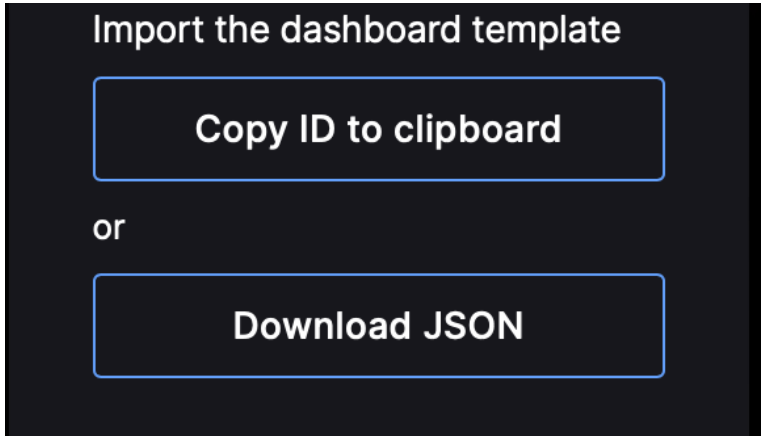
On the Grafana web site, find the dashboards you want to use

If Grafana has access to the internet, click the button to copy the dashboard ID

If not, Download the JSON data for the dashboard



grafana.com
Open Source
Community Resources
Dashboard Templates



VELOCITY SOFTWARE

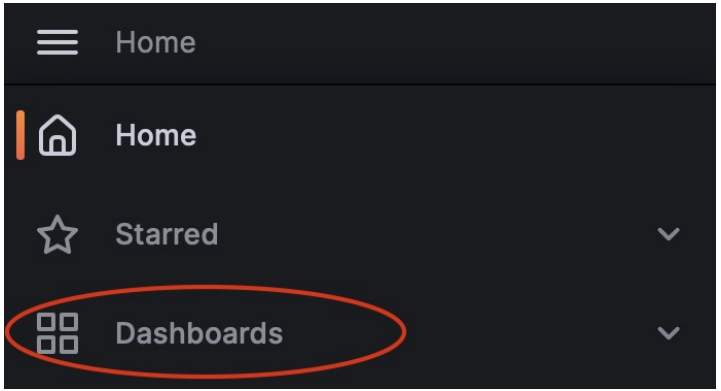
On your local Grafana, select Dashboards

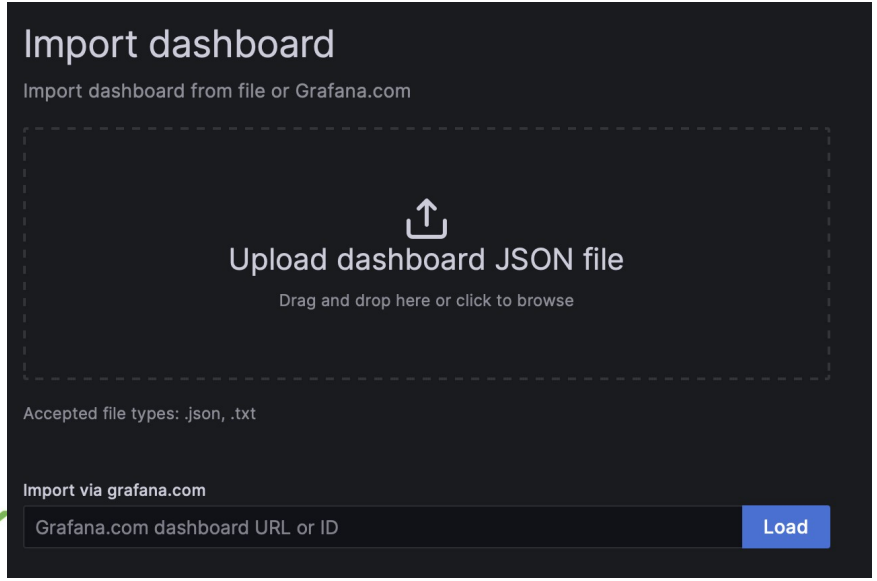
Open the New menu, select Import

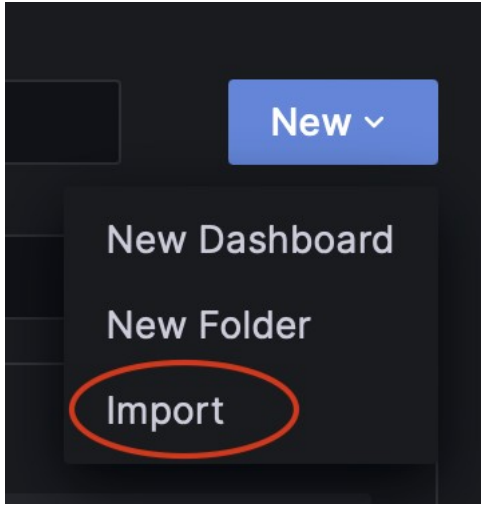
Paste the ID that was copied into the text box

Or upload the JSON

Later on the import screen is where the JSON can be pasted







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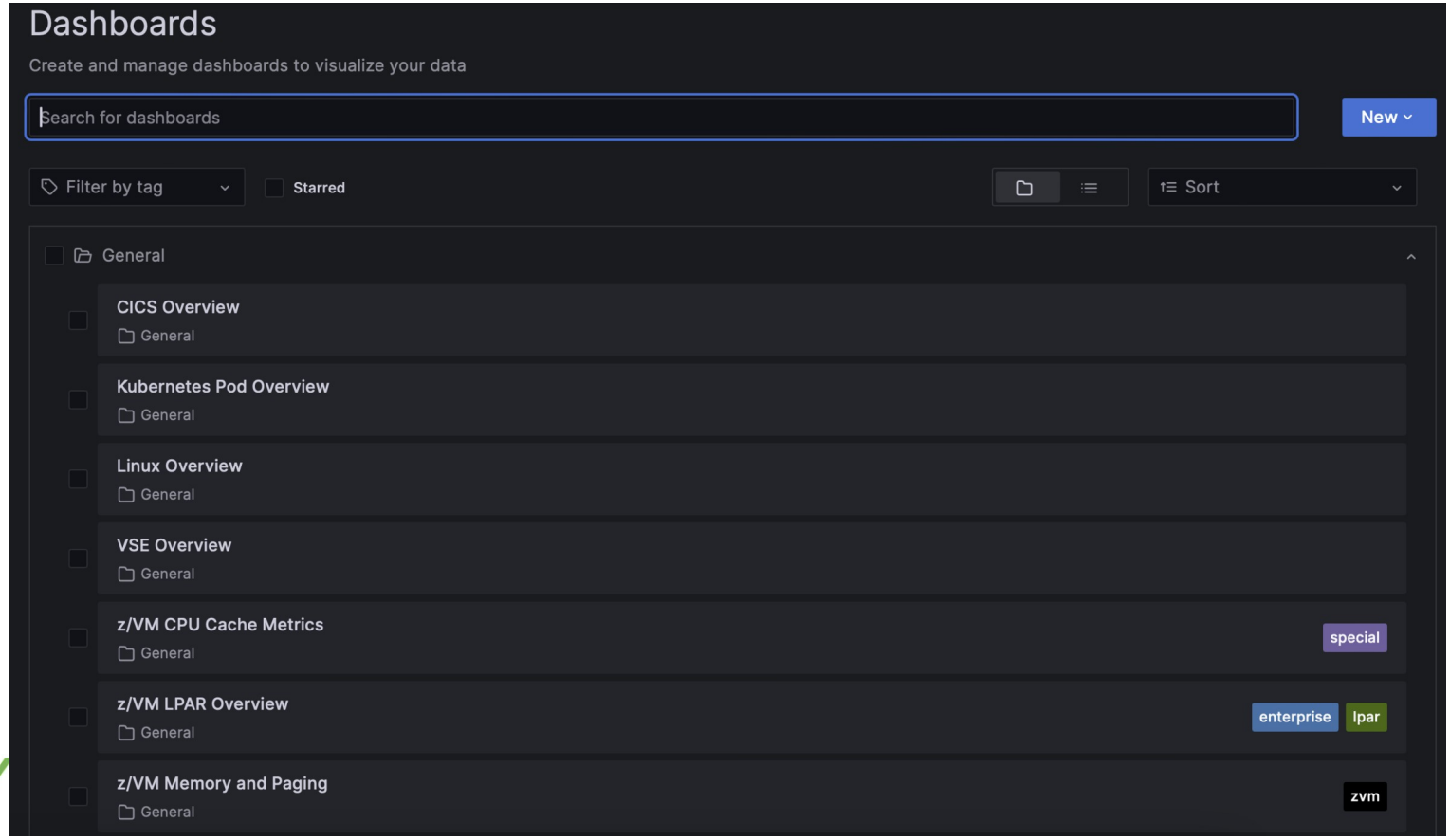
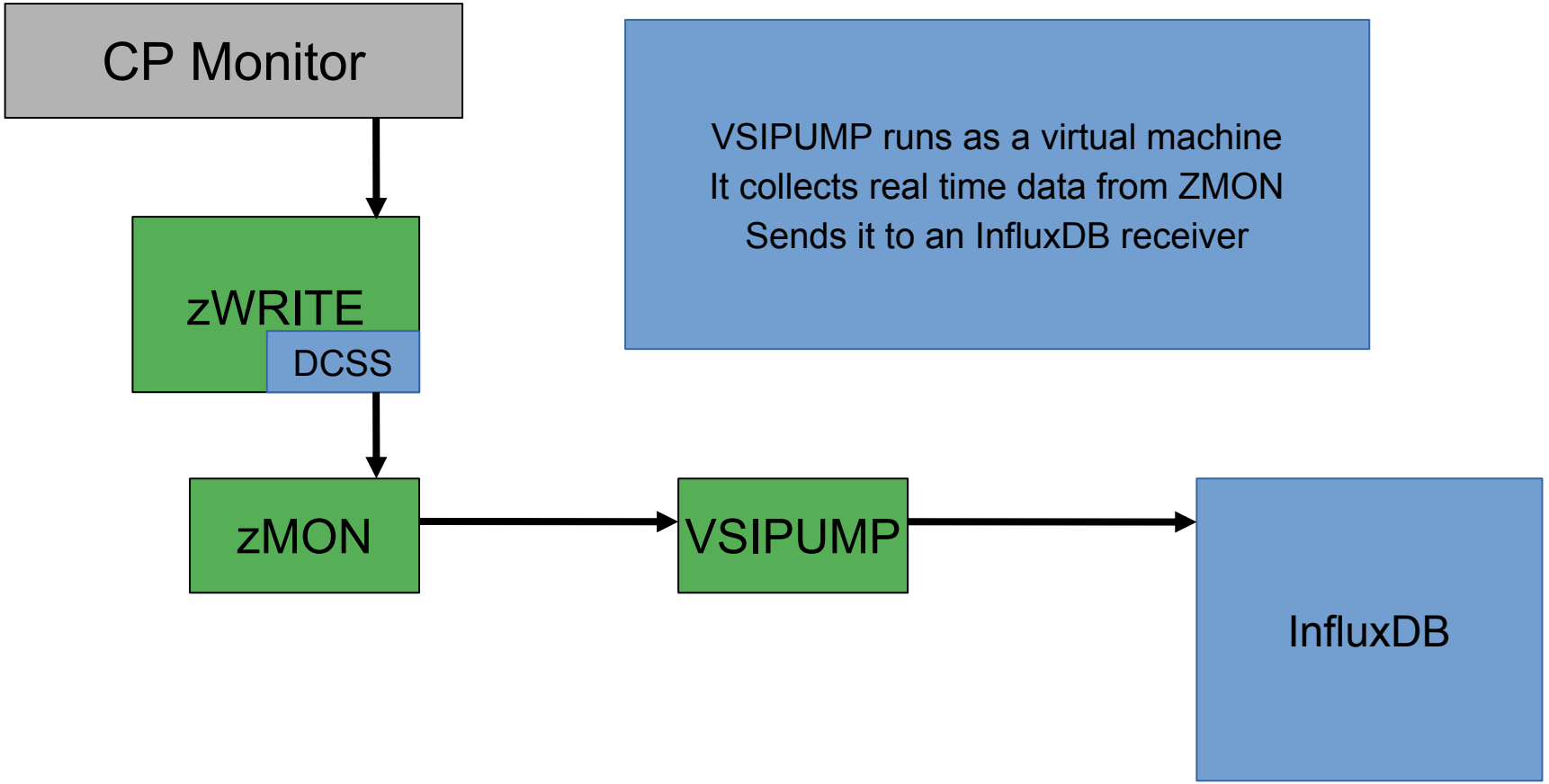
When the dashboards are imported, they will all appear on the list



VSIPUMP

- Delivered as a zVPS product package
- Runs in a virtual machine
- Collects realtime data every minute
- Connects to InfluxDB (V1.10 is tested) or OpenTelemetry
- Uses the same z/VM dashboards that are available from the Grafana web site
- Configure the IP address, userid/password, and optional collection features
  - Linux, VSE, CICS, Kubernetes, MongoDB

Infrastructure Overview



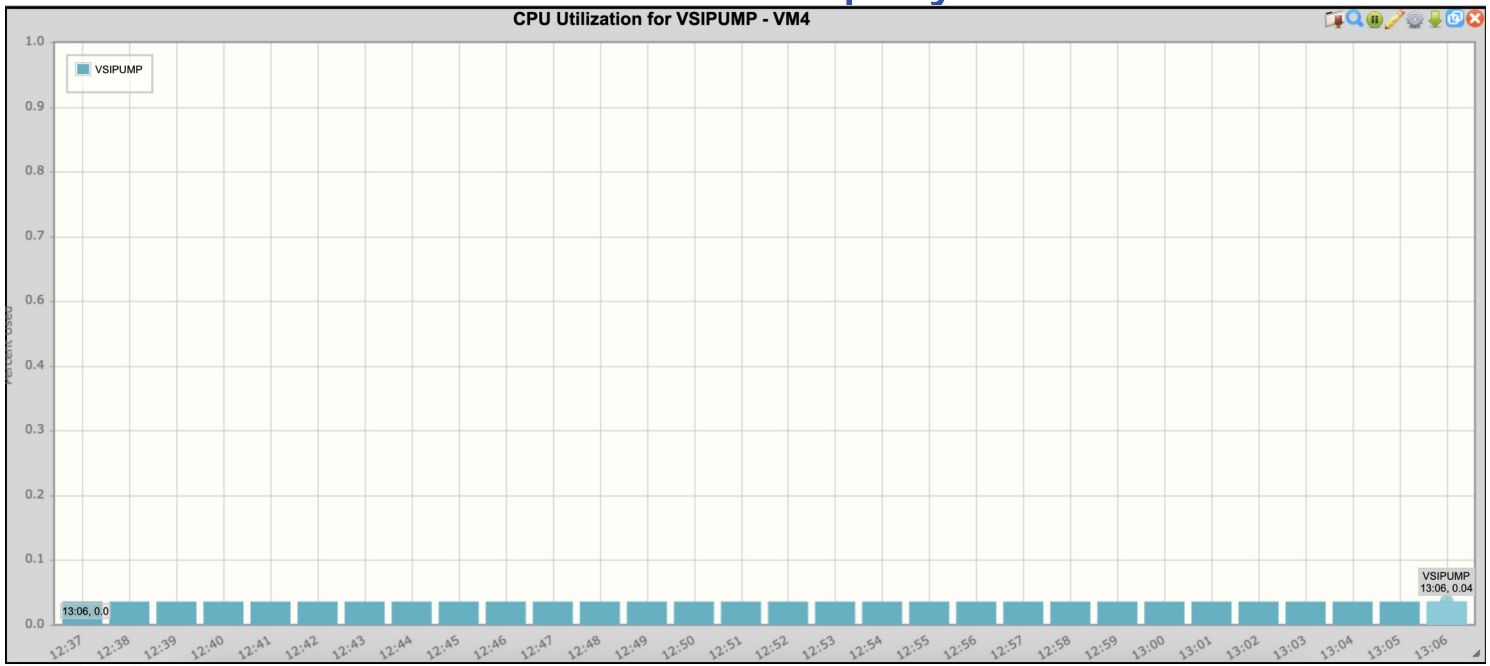
VELOCITY SOFTWARE

Collects >200 data elements every minute

Populates an Influx database

Grafana dashboards access the database to display the data

Using much less than .1% of a CPU

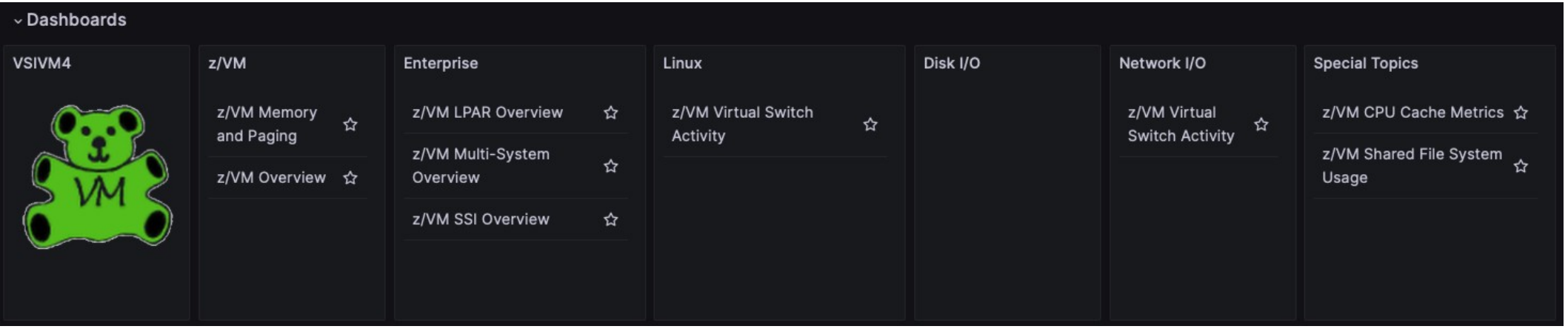


VELOCITY SOFTWARE

Point your web browser to the Grafana machine (port 3000)

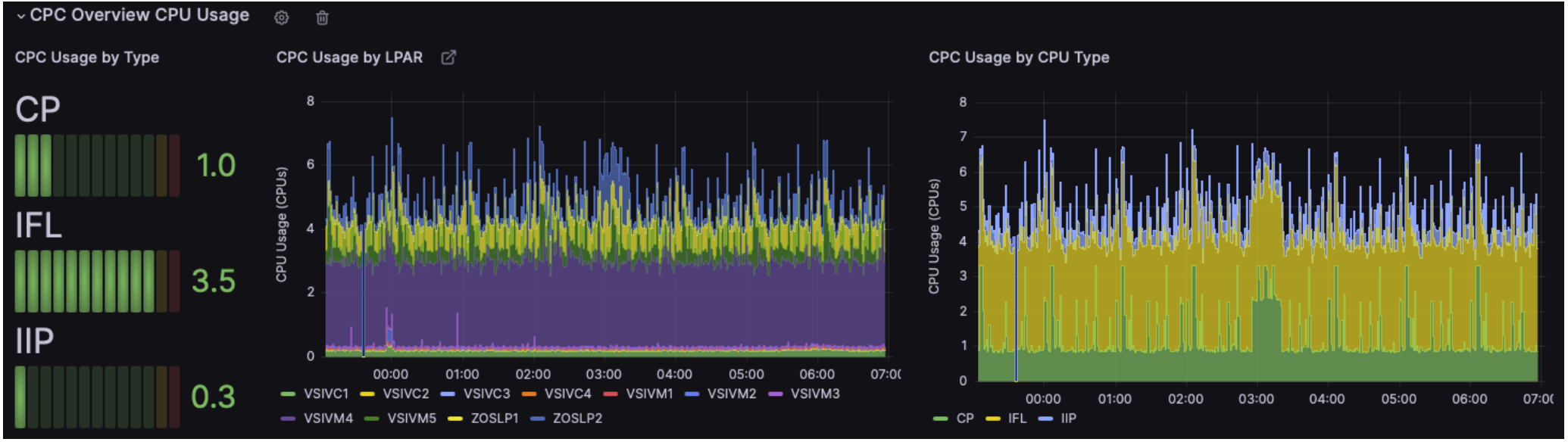
Click on a dashboard (z/VM Overview)

‘Dashboards’ panel contains a list of the other available dashboards



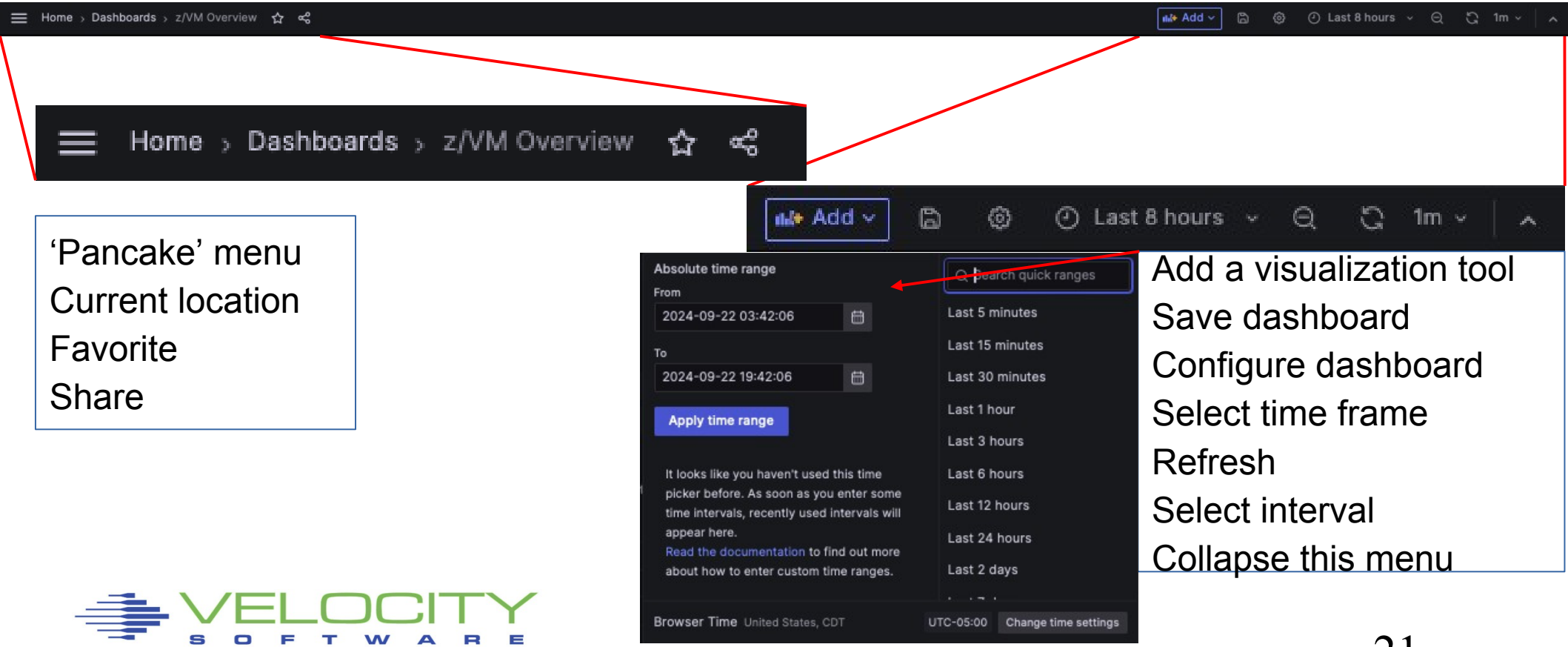
CPC Overview CPU Usage

Each of the processor types and LPARs



SSI Overview

Navigating

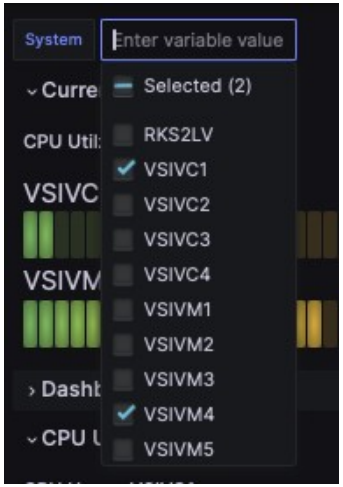


‘Pancake’ menu
Current location
Favorite
Share

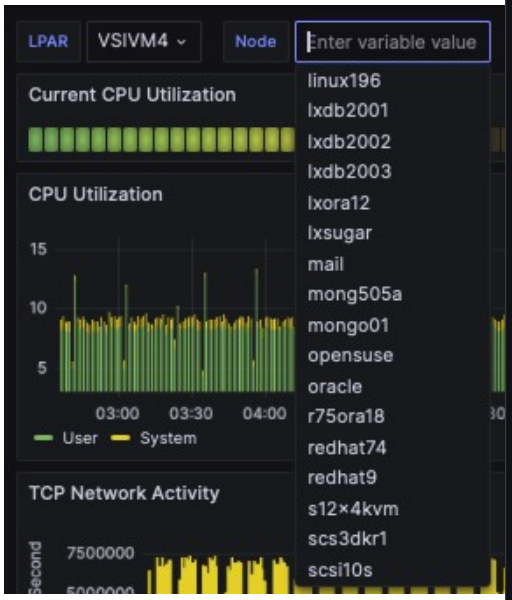
Add a visualization tool
Save dashboard
Configure dashboard
Select time frame
Refresh
Select interval
Collapse this menu

VELOCITY SOFTWARE

Multi-System Overview

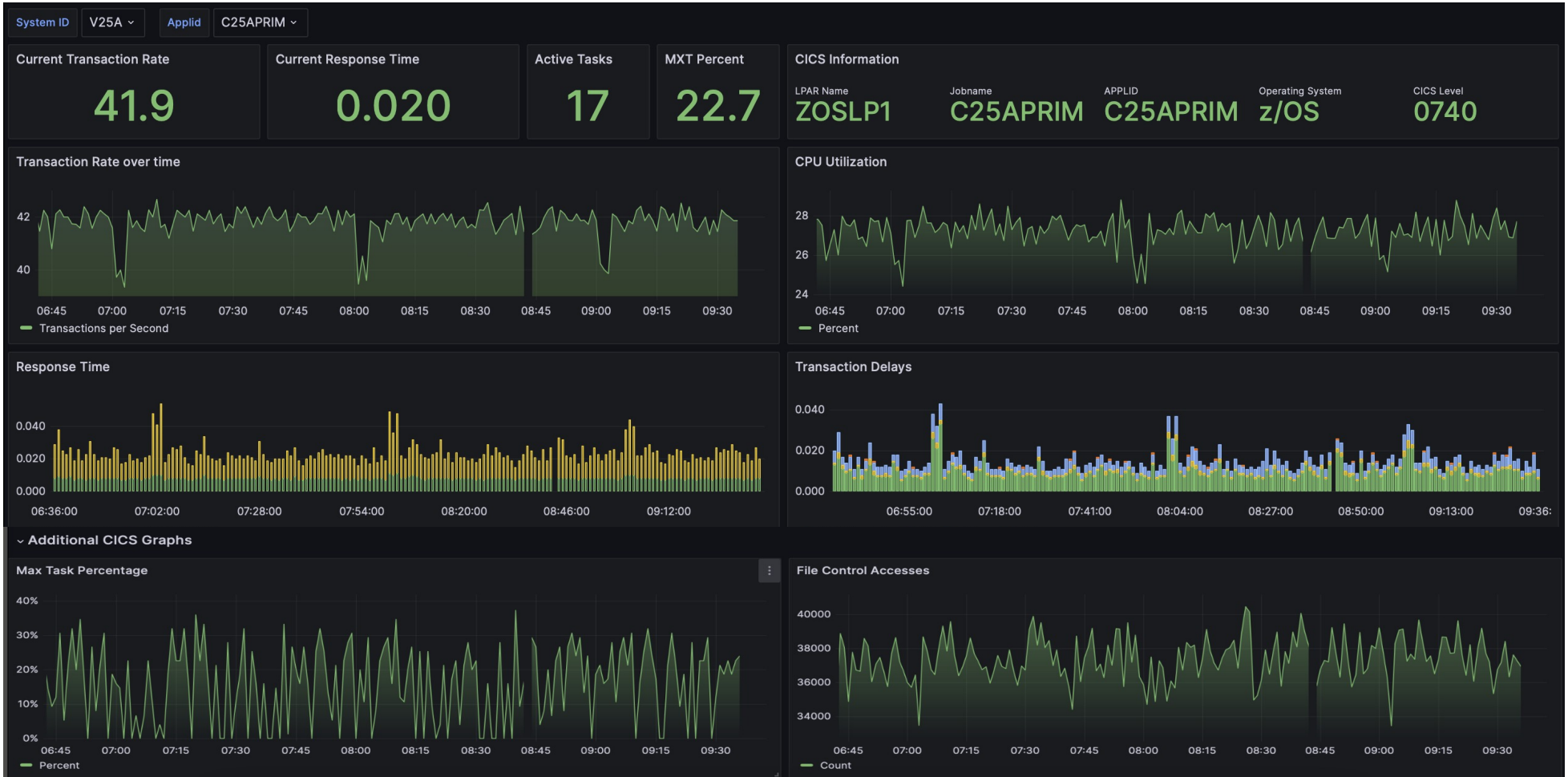


And Linux!

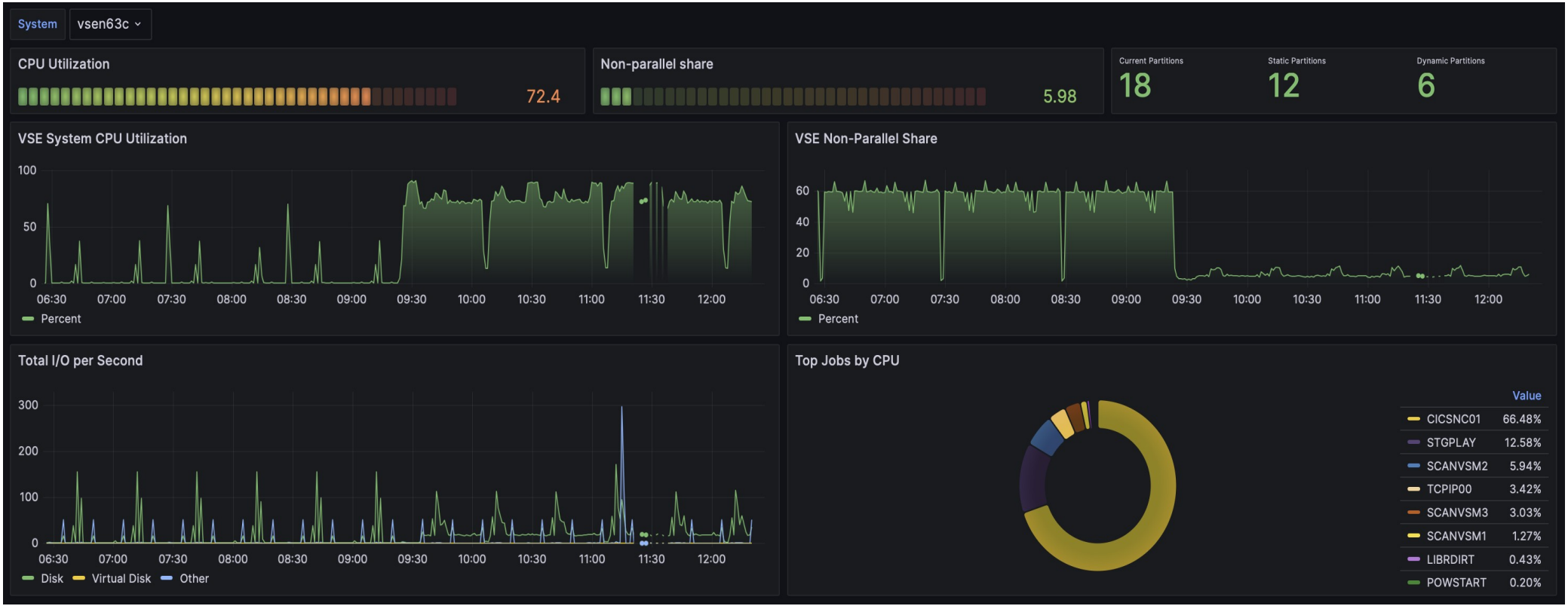

LPAR
VSIVM4
Node
Enter variable value
Current CPU Utilization
CPU Utilization
15
10
5
03:00
03:30
04:00
User
System
TCP Network Activity
7500000
linux196
lxdb2001
lxdb2002
lxdb2003
lxora12
lxsugar
mail
mong505a
mongo01
opensuse
oracle
r75ora18
redhat74
redhat9
s12×4kvm
scs3dkr1
scsi10s


LPAR
VSIVM4
Node
mongo01
Current CPU Utilization
9.42
Current I/O Activity
888
Uptime
Days
385
Hours
4
Minutes
25
Linux Information
Class ID
TheUsrs
LPAR
VSIVM4
Virtual Machine
MONGO01
Virtual CPUs
1
MIB Source
VSI
MIB Level
1-5.8.el
IP Address
10.1.1.242
Linux Level
RHELServer 7.4 (Maipo)
Load Averages
1m
4.88
5m
5.39
15m
5.56
Users/Processes
Users
0
Processes
61
TCP Connections
10
CPU Utilization
30
20
10
0
05:00
05:30
06:00
06:30
07:00
07:30
08:00
08:30
09:00
09:30
10:00
User
System
I/O Activity
0
-5000
-10000
Blocks In
Blocks Out
TCP Network Activity
Bytes per Second
10000000
5000000
0
04:25:00
05:17:00
06:09:00
07:01:00
07:53:00
08:45:00
09:37:00
Input
Output
UDP Network Activity
Bytes per Second
30
20
10
0
Input
Output

CICS data!


System ID
V25A
Applid
C25APRIM
Current Transaction Rate
41.9
Current Response Time
0.020
Active Tasks
17
MXT Percent
22.7
CICS Information
LPAR Name
ZOSLP1
Jobname
C25APRIM
APPLID
C25APRIM
Operating System
z/OS
CICS Level
0740
Transaction Rate over time
42
40
06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30
Transactions per Second
CPU Utilization
28
26
24
06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30
Percent
Response Time
0.040
0.020
0.000
06:36:00 07:02:00 07:28:00 07:54:00 08:20:00 08:46:00 09:12:00
Transaction Delays
0.040
0.020
0.000
06:55:00 07:18:00 07:41:00 08:04:00 08:27:00 08:50:00 09:13:00
Additional CICS Graphs
Max Task Percentage
40%
30%
20%
10%
0%
06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30
Percent
File Control Accesses
40000
38000
36000
34000
06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30
Count

VSE data!



VELOCITY SOFTWARE

A customer request to provide data using Prometheus

- Grafana would access the Prometheus data

We accepted the challenge

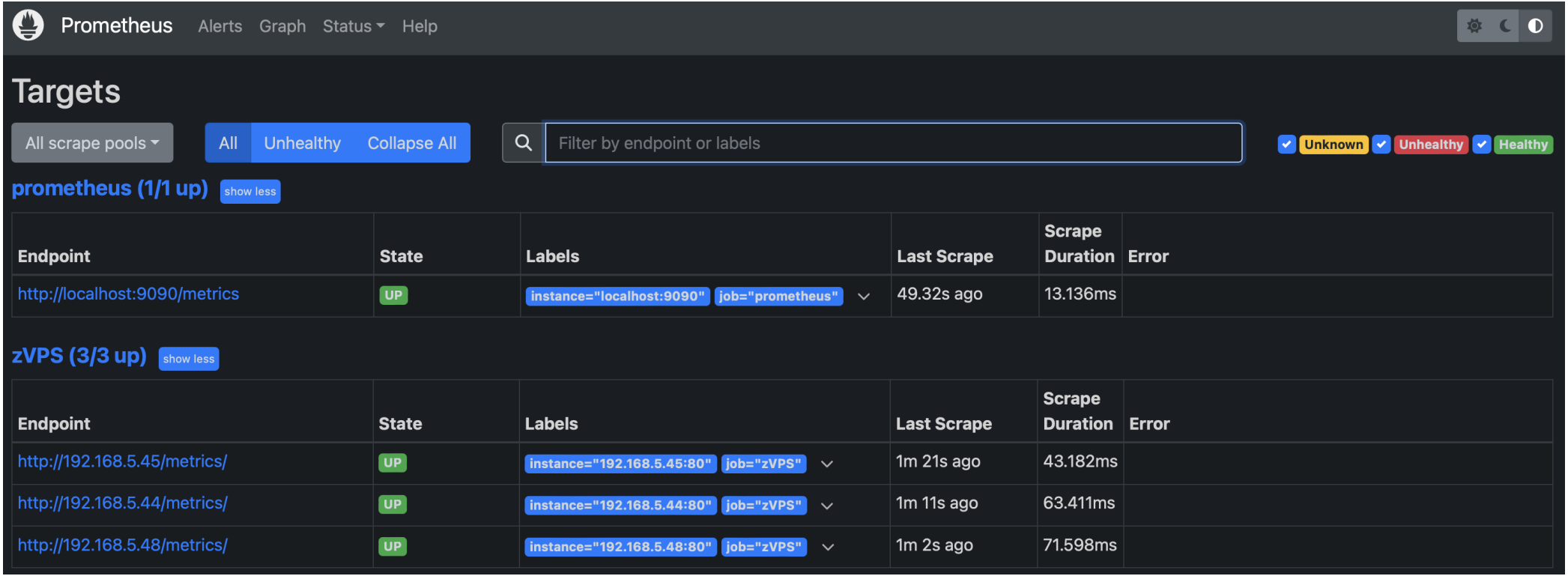
Much different than InfluxDB

- Pull; instead of push

Configuration – prometheus.yml

```
scrape_configs:
  - job_name: 'prometheus'

    # Override the global default and scrape targets from this job every 5 seconds.
    scrape_interval: 5s

    static_configs:
      - targets: ['localhost:9090']

  # The job name is added as a label `job=<job_name>` to any timeseries scraped from this config.
  - job_name: "zVPS"
    scrape_interval: 1m
    metrics_path: '/metrics/'

    # metrics_path defaults to '/metrics'
    # scheme defaults to 'http'.
    static_configs:
      - targets: [
      '192.168.5.48', '192.168.5.44', '192.168.5.45'
      ]
```

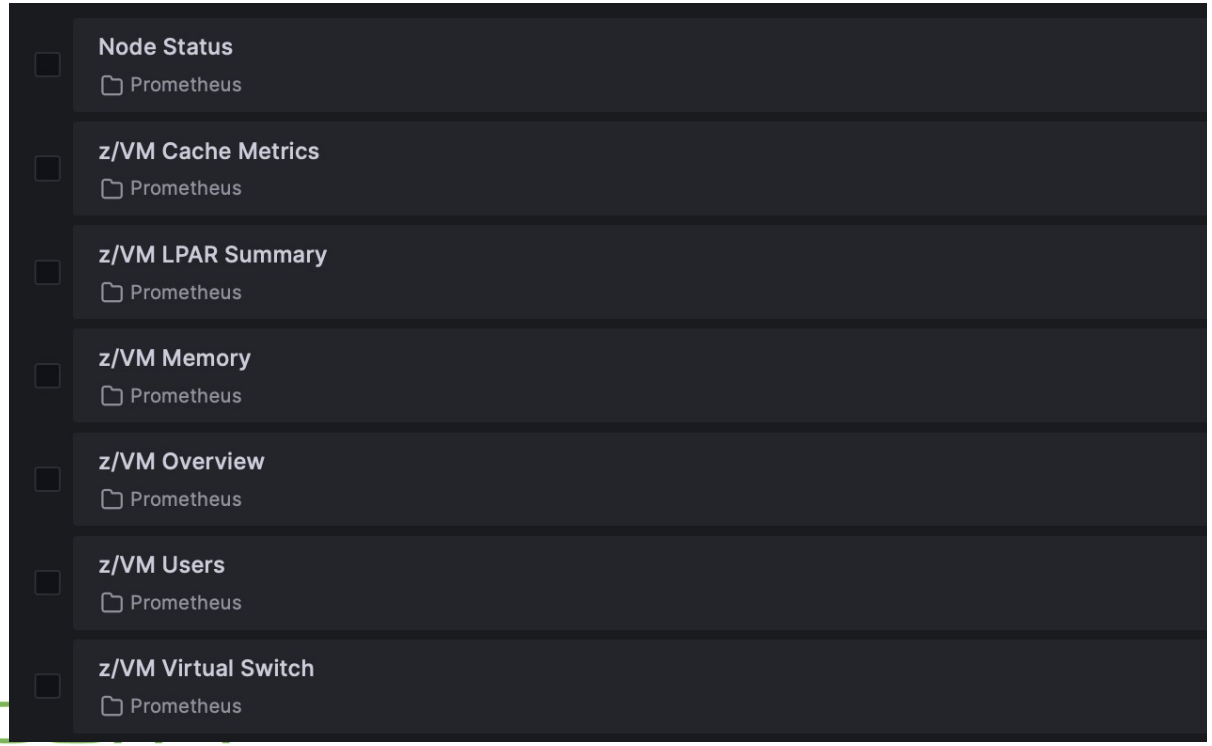
Target status



VELOCITY SOFTWARE

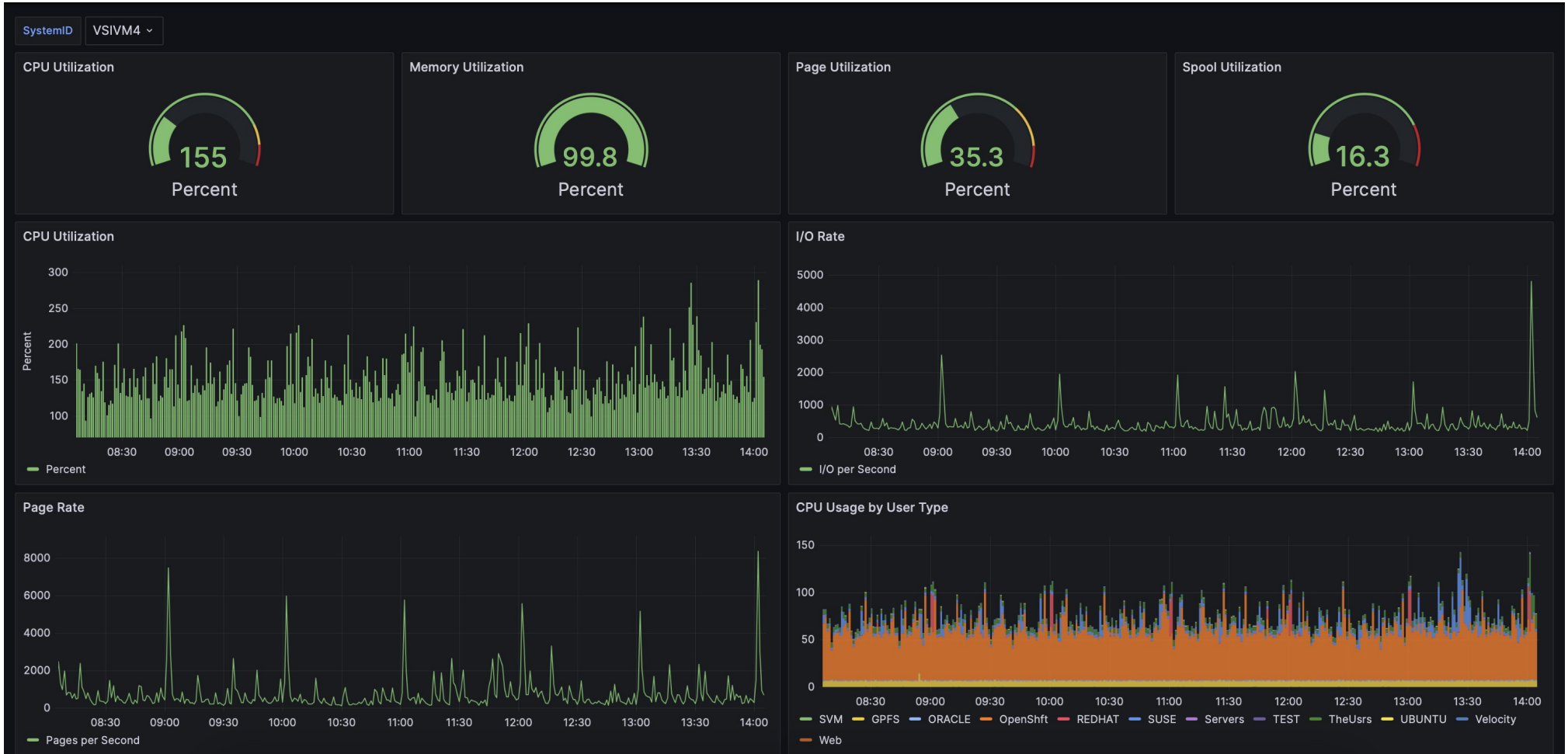
A lot of the same data is being collected, ‘scraped’, by Prometheus

Similar dashboards have been designed



VELOCITY SOFTWARE

z/VM Overview



MongoDB Data

Visualization

the act or process of interpreting in visual terms or of putting into visible form

Deliver data for use by a non-native visualization tool

Use the tool to quickly analyze the data

Go back in time to determine what happened

Customers can easily design any dashboards they need

Standard visualization tools remain available (zVIEW)

New Education

Exciting News!!
Velocity Software is now your place for z/VM education!

- **Self-Study and Instructor-led classes**
- **Upcoming Instructor-led Class:**
  - **July 8-10 2026 – Modules 1, 2 and 3 (from our education page)**

Ask about it here at the workshop!
See out website – VelocitySoftware.com/Educate/Training
Send an email to – education@velocitysoftware.com